

REMARKS

Applicants hereby elect the invention of Group I, claims 1-6 without traverse. Applicants by the instant amendment have cancelled claims 7-10 without prejudice. The title of the invention has been amended to conform with the elected claims.

An early action on the merits is respectfully requested.

If any fees are required in connection with this case, it is respectfully requested that they be charged to Deposit Account No. 02-0184.

Respectfully submitted,

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By

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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313" on June 4, 2003.


Lori J. Larson



Clean copy of amended specification Pg. 1 - 6-4-03

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JUN 10 2003
GROUP 3600

**ZIRCONIUM ALLOY HAVING EXCELLENT CORROSION RESISTANCE AND
MECHANICAL PROPERTIES FOR NUCLEAR FUEL CLADDING TUBE**

5

TECHNICAL FIELD

The present invention relates to a zirconium alloy having excellent corrosion resistance and mechanical properties and a method for preparing a nuclear fuel cladding tube by zirconium alloy. More particularly, the present invention is directed to a zirconium alloy comprising $\text{Zr-aNb-bSn-cFe-dCr-eCu}$ ($a=0.05-0.4$ wt%, $b=0.3-0.7$ wt%, $c=0.1-0.4$ wt%, $d=0-0.2$ wt% and $e=0.01-0.2$ wt%, provided that $\text{Nb+Sn}=0.35-1.0$ wt%), and to a method for preparing a zirconium alloy nuclear fuel cladding tube, comprising melting a metal mixture comprising zirconium and alloying elements to obtain an ingot, forging the ingot at β phase range, β -quenching the forged ingot in water after a solution heat-treatment at $1015-1075$ °C, hot-working the quenched ingot at $600-650$ °C, cold-working the hot-worked ingot in three to five times with intermediate vacuum annealing, and final vacuum annealing the cold-worked ingot at $460-540$ °C.

25 **BACKGROUND ART OF THE INVENTION**



Marked up version of specification change - 6-4-03

**ZIRCONIUM ALLOY HAVING EXCELLENT CORROSION RESISTANCE AND
MECHANICAL PROPERTIES [AND METHOD] FOR [PREPARING] NUCLEAR
FUEL CLADDING TUBE [BY ZIRCONIUM ALLOY]**

5 **TECHNICAL FIELD**

The present invention relates to a zirconium alloy having excellent corrosion resistance and mechanical properties and a method for preparing a nuclear fuel cladding tube by zirconium alloy. More particularly, the present invention is directed to a zirconium alloy comprising Zr-aNb-bSn-cFe-dCr-eCu ($a=0.05-0.4$ wt%, $b=0.3-0.7$ wt%, $c=0.1-0.4$ wt%, $d=0-0.2$ wt% and $e=0.01-0.2$ wt%, provided that $Nb+Sn=0.35-1.0$ wt%), and to a method for preparing a zirconium alloy nuclear fuel cladding tube, comprising melting a metal mixture comprising zirconium and alloying elements to obtain an ingot, forging the ingot at β phase range, β -quenching the forged ingot in water after a solution heat-treatment at $1015-1075$ °C, hot-working the quenched ingot at $600-650$ °C, cold-working the hot-worked ingot in three to five times with intermediate vacuum annealing, and final vacuum annealing the cold-worked ingot at $460-540$ °C.

25 **BACKGROUND ART OF THE INVENTION**

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